

REMARKS

Claims 1-5 are presented in this application. In the Office Action dated March 24, 2009, claims 1-4 have been rejected under 35 U.S.C. 103(a) as assertedly obvious over Coenen U.S. Patent No. 6,124,658 in combination with Naruse et al. Japanese Patent Document 11-146609A. Claim 5 has been rejected under 35 U.S.C. 103(a) as assertedly obvious over Coenen in combination with Naruse et al. further in combination with Imaizumi et al. Japanese Patent Document 09096313A. The applicant respectfully disagrees and therefore traverses the rejections. Reconsideration is respectfully requested.

First of all, the Coenen reference is merely representative of the known prior art over which the present invention seeks to improve. Indeed, the Coenen reference is merely the U.S. counterpart to German Patent Publication DE 198 27 606 A1 already acknowledged and discussed in the Background section of this application. As discussed more fully at paras. 0006-0008 in the present application, Coenen merely discloses the use of magnetic bearing components with ring-shaped permanent magnets seated on a bearing shoulder of a rotor shaft and secured by an annular binding. It is known that such ring magnets inserted into magnetic bearing arrangements are polarized in the axial direction.

Heretofore, such ring magnets have been seated on the bearing shoulder in one of two ways. First, the magnets may be pushed with a degree of play onto their bearing shoulder and then subsequently fixed in place by means of an annular bearing, whose interior diameter is below the exterior diameter of the ring magnet. Alternatively, an annular binding may be first fixed in place on the ring magnet by means of a press fit, and then the assembly of the ring

magnet with the binding was subsequently fixed in place on the bearing shoulder of the rotor shaft also by means of a press fit.

However, both methods suffer the disadvantage that damage to the ring magnets often occurs in the course of the press-fitting process, even though the diameter of the connecting surfaces may be made with very low tolerances, which is somewhat expensive and has a negative effect on the manufacturing costs of the magnetic bearing components. Thus, with these described fabricating methods, the amount of waste produced under the prior art has been relatively large.

Accordingly, the present invention proposes to modify the known magnetic bearing components having a ring magnet such that it becomes possible to fabricate the magnetic bearing components cost-effectively and preferably as free of waste as possible. In accordance with the instant invention, the magnetic bearing component connected with the rotor shaft is embodied with a slit, i.e. as an open, permanent magnet ring, in order to assure the deformability required for applying an annular binding. In this manner, the slit ring magnet may be provided with an interior diameter which is larger than the diameter of the bearing shoulder of the rotor shaft, whereby the magnet can be readily positioned on its bearing shoulder without difficulty and can subsequently, in the course of applying the annular binding, be radially deformed so as to securely fix in place the annular binding on the ring magnet without the danger of damaging the ring magnet as the annular binding is being applied.

The primary reference to Coenen is admitted in the Office Action to be deficient in teaching or suggesting the use of such a slit-formed ring magnet. In turn, the magnet rotor

described in the cited Naruse et al. Japanese Patent Document 11-146609A fails to reasonably teach or suggest any such modification of or combination with the Coenen reference.

As clearly evidenced by the drawings and the associated English-language abstract of the Naruse et al. reference, the reference does not relate to a permanent magnet ring of a magnetic bearing component, but instead to a rotatingly seated permanent magnet cylinder of an electrical synchronous motor. In order to be capable of rotating such a synchronous motor via an outside-located electrically energized coil, the permanent magnet cylinder must have different polarizations in the direction of rotation, as represented in the drawings. In Figs. 5a and 5b, a corresponding permanent magnet cylinder is respectively represented, in which the pole segments of the N-pole and S-pole respectively include 180°. Fig. 5c shows a permanent magnet cylinder in which the alternately arranged pole segments of the N-pole and S-pole respectively include 90°.

Since an angularly accurate uniform size of the pole segments of the permanent magnet cylinder is of great importance for the correct functioning of such a synchronous motor, the Naruse et al. reference teaches to arrange respective notches between the pole segments as quasi-rated break locations. Naruse et al. clearly intends in this manner to prevent a disadvantageous influence of the magnetic flux in the synchronous motor from occurring during the operation of the electric motor on account of an uncontrolled break at the permanent magnet cylinder.

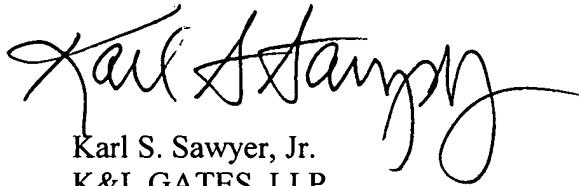
It is therefore respectfully submitted to be clear that a permanent magnet cylinder of an electrical synchronous motor having notches intended to be rated break locations, as taught by Naruse et al., is not at all comparable, either in its basic object or its structure, to a magnetic bearing component whose permanent magnet ring is slit in order to assure its deformability

required for applying an annular binding, as in the present invention. There is no basis within the disclosures of either Coenen or Naruse et al. to suggest or motivate any person of ordinary skill in the art to attempt any combination of features from the two references, much less the specific form of combination being asserted in the Office Action. It is only in hindsight with the benefit of the disclosure of the present invention, if at all, that any such combination would be apparent, but such a combination is not "obvious" within the meaning and intent of Section 103, but rather is the antithesis of obviousness.

Neither the tertiary Japanese reference to Imaizumi et al., nor any other references of record, contain any teachings or suggestions that would reasonably overcome the deficiencies of the Coenen and Naruse et al. references.

Accordingly, for all of the reasons set forth above, it is respectfully submitted that the present invention as defined by the standing claims is patentably distinguishable over the cited references. Favorable reconsideration and prompt issuance of a formal Notice of Allowance of this application are respectfully requested.

Respectfully submitted,



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